Monetary Policy in the Media*

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Abstract

Just like private companies depend crucially on their ability to reach customers, policymakers must communicate with private agents to be successful – and much of this communication is channeled through the media. This is especially true for central banks because the effectiveness of monetary policy depends to a large degree on their credibility among the general public. Using the case of the European Central Bank (ECB), the paper analyses the favorableness with which monetary policy decisions are reported upon in the print media. We find that media coverage is, among other things, influenced by the amount of information communicated by the ECB. There are, however, also indications of a critical monitoring role assumed by the media, which tends to report more negatively on ECB policy decisions when inflation exceeds the inflation target.

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1. Introduction

The commercial success of a private firm crucially depends on its ability to reach its customers and to convey a favorable image of its products and corporate identity – but does the same apply to policy institutions? In many cases, the answer is yes. It is one thing to take an appropriate policy decision, yet the ultimate success of such a decision may hinge on the ability of policymakers to convince its target audience that the decision was indeed appropriate. This is especially true for central banks, which have direct control only over a single interest rate, usually the overnight rate, but need to impact asset prices and interest rates at all maturities in order to achieve their objectives (Blinder 1998, Bernanke 2004). Ultimately, this means that central banks must attempt to credibly influence the expectations of private agents, and communication is key in this regard.

The challenge for a policy institution such as a monetary authority is that its target audience can be both very large and highly diverse. Some among the audience can be easily reached; in the case of central banks, this is certainly true for financial market participants, which have been shown to be highly sensitive to direct central bank communication.[1] However, others might be more difficult to get through to. This applies, in particular, to the general public, which sets inflation expectations that eventually feed into the actual evolution of inflation, for instance through corresponding wage claims, as well as through savings, investment and consumption decisions. However, the general public rarely directly reacts to central bank communication but "gets its news" indirectly through the media. The question, thus, becomes whether and how central banks are able to get their message out through the media as an intermediate transmitting device, and how this affects the views and possibly the behavior of the public.

There is a growing literature showing that the media affect the behavior of economic agents in other contexts: e.g. Doms and Morin (2004) find that consumer sentiment is affected by the tone and volume of reporting; Carroll (2003) shows that households' macroeconomic expectations derive from news reports of the views of professional forecasters; while Della Vigna and Kaplan (2007) show that media coverage affects voting.

The paper analyses how policy decisions are conveyed to the general public through the print media. Our focus is on monetary policy and the case of the European Central Bank (ECB), which is a particularly intriguing case because of its relative young age and the fact that it is operating in multi-country, multi-cultural, and multi-lingual context of countries with markedly different histories of inflation, monetary policy strategies, and institutions. In that context, country-specific perceptions of the ECB's monetary policy have already prompted political controversy about the ECB's role and mandate (Ehrmann and Fratzscher, 2010). This creates an interesting and potentially important role for the national media in informing a heterogeneous regional audience about the ECB's policy actions and intentions.

[1] The empirical literature has come to a consensus that central bank communication is a powerful tool to move financial markets. Guthrie and Wright (2000) find this for the Reserve Bank of New Zealand, Kohn and Sack (2004) for the Federal Reserve, Reeves and Sawicki (2007) for the Bank of England, Andersson et al. (2006) for the Swedish Riksbank, and Ehrmann and Fratzscher (2007) in a comparative study for the Federal Reserve, the Bank of England and the ECB. Communication tends to be particularly effective tool when nominal interest rates are close or equal to zero (Bernanke, Reinhart and Sack 2004, Woodford 2005). For a survey of the relevant literature, see Blinder et al. (2008).

To investigate the relation of economic policymaking and media coverage, the paper uses a novel dataset that contains information on the favorableness of media reporting of ECB monetary policy decisions, reaching back to 1999 and covering 57 international and national newspapers. Moreover, the paper analyses various channels through which the ECB communicates with the public, focusing in particular on the ECB's press conferences, which occur on the days of policy decisions, and thus allow the ECB to elaborate on its policy decisions in an almost instantaneous manner.

It is important to keep in mind, however, that the media coverage of monetary policy decisions may be influenced from three sides: the policymaker, the preferences of the general public, and the media itself. Indeed, a different strand of the literature on the role of the media suggests that media coverage may be influenced by the journalistic preferences (Groseclose and Milyo 2005). Moreover, media coverage also tends to be affected by the views and preferences of the audience as the success of a particular media provider depends on the demand for its products and services by the latter (e.g. Mullainathan and Shleifer 2005, Hamilton 2004). Gentzkow and Shapiro (2010) show that news reporting responds strongly to consumer preferences. They find that the demand side can account for a large share of the variation in media slant, whereas the identity of a newspaper's owner (i.e. a proxy for the supply side) is far less important. The explanation for this has been provided in an earlier paper of theirs, Gentzkow and Shapiro (2006), where they show that in the presence of uncertainty about the quality of an information source, consumers will tend to assign higher quality to sources that contain reports which conform to the consumers' prior expectations.

In this paper, we try to disentangle these various influences. We find that the press critically discusses the ECB's policy decisions in the context of prior market expectations and of the inflation environment. If a given policy decision surprises financial market analysts, the tone of the reports is generally more negative. Similarly, the higher is inflation in the euro area, the less favorably are the current ECB decisions discussed. These findings suggest that the media assumes a monitoring role by critically evaluating the performance of the central bank.

At the same time, the central bank can also shape the perception of its actions in the media. Our results show that media coverage is responsive to the ECB's communication. We find that in particular press conferences with a large informational content (as measured through the size of financial market reactions during the press conference) are related to more favorable press reports. Moreover, our results suggest that decisions receive a more positive coverage if they have been accompanied by a relatively large number of statements by the ECB President in the preceding inter-meeting period.

These findings suggest that media reports are responsive to efforts by the ECB to explain the motivation behind a given decision. This is in particular the case for policy decisions surprising financial markets. While such surprises are, as a rule, met with critical media reporting, the reception is less negative when the subsequent press conferences are informative, suggesting that in these cases the ECB successfully communicates some rationale for its earlier, surprising, actions. However, there are also cases where the press is unresponsive. For instance, we find that the tone of reporting is always more negative when inflation is high, which underlines a critical monitoring role of the media.

Looking into the national dimension of newspaper coverage, our results show little or no role for national biases in the tone of media reporting.[2] Even if national inflation deviates relatively strongly from the euro area figures, the favorableness of the national coverage is unaffected.

The remainder of this paper is structured as follows. Section 2 describes the data set that is employed in the analysis. Section 3 reports the results regarding the determinants of press coverage, whereas Section 4 provides more details on how communication by the ECB to explain the motivation behind a given decision, either through the press conference, or in the inter-meeting period, affect understanding and acceptance of a given policy decision. Section 5 concludes.

2. Data on Press Coverage

The analysis in this paper is based on a novel dataset that measures the favorableness of press coverage of monetary policy decisions by the ECB. This dataset comprises an index for each euro area country and some international press. It has been created by specialized media experts in the ECB's Press and Information Division for the purpose of internal reporting, with a view to analyzing press reactions in a systematic fashion, and to provide comparisons over time and across countries.[3] The ECB's media experts read the reports in a large sample of European newspapers following the Governing Council meetings. As the ECB's monetary policy decisions are announced and shortly afterwards explained in a press conference on Thursdays,[4] the indices are based on the Friday and weekend editions of newspapers. 57 newspapers are covered, 18 of which can be categorized as financial press. Table 1 gives an overview of the various newspapers in the index.

Table 1

Coverage of each newspaper is measured in an index summarizing the favorableness with which the ECB's monetary policy decision is discussed on a scale ranging from -2 to 2, with the interpretation

-2 – very negative;
-1 – negative;
0 – neutral;
1 – favorable;
2 – very favorable.

[2] This is somewhat in contrast to de Haan et al. (2004). Comparing reports on the ECB's monetary policy decisions published in the Frankfurter Allgemeine Zeitung (FAZ) and in the Financial Times (FT) in 1999 and 2000, the paper finds that the FT reports considerably less and more critical about the role of monetary aggregates in the ECB's monetary policy decisions than the FAZ.

[3] Each Governing Council meeting is covered by several press officers, as a number of languages need to be covered. This number ranges from 3 to 8; in total, 48 press officers have been involved in the construction of the indices since 1999.

[4] After the announcement of monetary policy decisions at 13:45 (ECT), the Press Conference commences at 14.30, lasts about 45 minutes and is held by the ECB President and Vice-President. The Press Conference comprises two elements; a prepared Introductory Statement that contains the background considerations for the monetary policy decision, and a Questions & Answers part during which the President and the Vice-President are available to answer questions by the attending journalists.

Finally, a national index is constructed by taking a simple arithmetic average of the different newspapers in a given country or for the international press, and by rounding it to the closest half-point. Accordingly, the indices range over nine possible outcomes, namely {-2; -1.5; -1; -0.5; 0; 0.5; 1; 1.5; 2}. The indices are available to us starting with the Governing Council meeting on October 7, 1999, and ending with the meeting on January 14, 2010.

Given the novelty of this data set, a number of remarks are in order. In particular, it should be kept in mind that our analysis focuses exclusively on a particular segment of the printed press. For instance, it does not include regional newspapers, which very often have a large combined circulation. Also, it does not include other media, such as television or radio reporting. Accordingly, there is a substantial part of the general public that is out of reach of the media analyzed here.

Despite the extensive experience of the ECB media experts with such assessments, the press coverage index is clearly subject to a good deal of judgment, and might therefore entail elements of subjectivity. We will address this possibility in our econometric analysis by controlling for expert-fixed effects.

The averaging across newspapers within countries implies certain advantages, but at the same time brings about some disadvantages. For instance, the index does not take into account differences in circulation or the importance of each newspaper as an opinion leader, as it does not attach larger weights to more widely read newspapers. It can therefore not assess in detail how many readers are likely to be reached by the reports. The averaging across specialized and general newspapers implies similar complications – as the two types of newspapers target different audiences, dissemination of the news among the general or the specialized public cannot be precisely assessed. The averaging also implies that we will only be able to use indirect controls for supply- and demand-driven determinants of media slant. On the other hand, an important advantage of averaging lies in its robustness to outliers. As the indices for each country are generally based on several newspapers, the average indices are likely to represent a good overall picture of media attention in a given country. All in all, the indices are therefore particularly useful in comparative analyses, either over time, or across countries.

Table 2

Table 2a provides a number of summary statistics for the indices. Our sample consists of 111 meetings, although the coverage is slightly smaller for some individual countries, due to possible delays in delivery of the newspapers. Overall, the index is rather balanced, with a mean across countries and over time of 0.040.

There is substantial variation in the indices, both across countries and over time. While Belgium, France, Greece and Italy are the countries with the overall least favorable reporting, Germany and Luxembourg are those with the most favorable, with a difference in the index of up to 0.2. Most of the variation is found over time, though. The range within a given country spans at least 2 full points.

Figure 1

Figure 1 plots the average value of the indices for each Governing Council meeting and the standard deviation across countries as a measure of the country differentiation. An interesting observation from Figure 1 is that press coverage seems to have been relatively more volatile

in the beginning of the sample, whereas it appears to have stabilized around a relatively neutral level towards the end, with little effect on the cross-country standard deviation. Overall, the figures suggest that there is substantial variation over time, but no systematic longer-term trend.

3. Determinants of Media Coverage

We now turn to the question of what determines ECB media coverage, including whether and how the coverage is responsive to policy decisions and ECB communication.

3.1 Possible determinants and their measurement

Central banks are an important news source for the media. They not only provide a steady stream of routine information (e.g., on financial statistics such as the growth of monetary aggregates) that may qualify as "neutral" news, they also supply material of potential front-page caliber (for instance, through interest rate or other policy action), which, depending on circumstances, may fall in the good or bad news category. The circumstances of a given policy decision as well as the explanation given for it in the accompanying communication, influences the amount and the type of news coverage it receives. For instance, the type of a *policy decision* plays an important role. This is certainly true for interest rate changes, which have the potential of being cast as particularly good or bad news (depending on perspective). But a similar argument holds, more generally, for policy surprises, including the absence of an expected interest rate change.

Beyond these proxies for the newsworthiness of a policy decisions, central bank *communication*, both on and between Governing Council meeting days, might be crucial for the perception of a decision and the ensuing press coverage it receives. In particular, this constitutes a channel by which the central bank might be able to influence press coverage. Clearly, if the ECB Governing Council makes more intensive use of its post-meeting press conference to channel information to journalists, financial markets and the public, the reception of a given policy decision might be more favorable. The same holds true for inter-meeting statements and *other communication*, such as the release of the ECB staff's projections. Finally, a special feature of the ECB's communication relevant in this regard is that the Governing Council holds its meetings outside Frankfurt in other euro area countries twice a year. We would like to see whether the national media in the host country tends to report more favorably about those press conferences.

But readers' and journalists' views, and thus central bank news coverage may also depend on the *environment*. We expect *macroeconomic conditions* to influence the favorableness of central bank news coverage. In part, this may reflect a potential "watchdog" function of the media. For instance, if the media takes on a role as a critical observer that scrutinizes the actions of the ECB as a guardian of price stability in the euro area, we would expect media coverage to be more negative if inflation is relatively high. Similarly, media attention may vary with real activity in the euro area. Another (mostly exogenous) element in the economic environment that may be important is monetary policy elsewhere, in particular in the U.S., as the ECB operates in an *international environment*. Contrasting the ECB's policy with those of other central banks may help financial markets and the public gauging the actions of the ECB.

Finally, a number of *country-specific conditions* could possibly influence the tone of the coverage a central bank like the ECB will receive in the media. Controlling for these is also important since newspapers are likely to slant their reporting toward the views of readers, even in competitive media markets (Mullainathan and Shleifer 2005; Gentzkow and Shapiro 2010), for instance because readers hold beliefs which they might like to see confirmed (Klayman 1995; Gentzkow and Shapiro 2006). One possibility is therefore that readers have predefined views of the ECB, and that newspaper reporting mirrors these. Potential determinants could therefore be the level of trust that people have in the ECB, as well as the deviations of a country's inflation performance from the euro area average or a country's historical inflation experience. For instance, we can imagine that the media in a country with relatively large deviations of inflation from the euro area average and/or a history of high inflation rates would be more concerned with the doings of the ECB than elsewhere. Country size may matter as well in the sense that larger countries may find the ECB policy closer to their national needs (given that the ECB sets monetary policy for the euro area, larger countries receive more weight in the ECB's considerations). What is more, national media attention might be affected if one of the members of the ECB's Executive Board is of the same nationality.

The objective of the remainder of the section is to test these various hypotheses with regard to the media coverage received by ECB monetary policy decisions. The specific set of explanatory variables is described below, and Table 2a reports summary statistics for each of them:[5]

ECB's policy decisions and communication

Policy decisions

ECB Monetary Policy Surprise	Absolute value of the difference between a monetary policy decision and the median expectation expressed in the regular Reuters poll[6]
ECB Monetary Policy Decision	Change in the ECB policy rates as announced after a given Governing Council meeting

Meeting-Day Communication

[5] Sources for the data, if not indicated otherwise: central bank websites; macro variables are real-time data as available at the day of the respective press conference, taken from Bloomberg.

[6] The Reuters poll surveys between about 30 and 60 financial market forecasters prior to each meeting during our sample period.

Market Reaction During the Press Conference	Proxy for the informational content of the press conference, based on the absolute return in the Euro-Bund futures contracts during the course of the entire press conference[7]
Governing Council Meetings Outside Frankfurt	Dummy variable; one for the country in which the meeting takes place, zero for all other countries, zero for all countries for meetings in Frankfurt

Inter-Meeting Communication

Communication Frequency	Number of statements about monetary policy inclination by the ECB president in the inter-meeting period, based on Ehrmann and Fratzscher (2007)

Other Communication

Release of Staff Projections	Dummy variable, set to one for press conferences where the ECB staff projections for future inflation and output growth have been released

Environment

Euro Area Macro Conditions

Euro Area Inflation	Latest figure for euro area HICP inflation released by the time of the press conference
Euro Area Industrial Production	Latest figure for euro area industrial production growth released by the time of the press conference

Federal Reserve

Fed Monetary Policy Surprise	For Fed decisions preceding the current Governing Council meeting: absolute value of the difference between the monetary policy decision and the median expectation expressed in the regular Reuters poll

Country-Specific Conditions

Absolute National Inflation Differential	Absolute difference between national and euro area HICP inflation; set to zero for the international press
Share of respondents not trusting the ECB	Share of national respondents in the latest Eurobarometer survey indicating that they tend not to trust the ECB; set to the euro area average for the international press.[8]

[7] The underlying eligible delivery bonds are German government bonds with a remaining term to maturity of between 8.5 and 10.5 years, which are typically considered the benchmark for long-term euro-denominated government debt. The future contracts are traded on the European Exchange (EUREX; Source: TickData Inc), and have a maturity of up to 9 months until March, June, September or December. Our data are based on the most liquid contracts at each point in time, which are typically the nearest-to-maturity futures. The switch to next-maturity contracts is performed when the daily tick volume of the back-month contract exceeds the daily tick volume of the current front month contract. Absolute returns are calculated as $r_t = abs[100*\ln(p_t/p_{t-1})]$, where p_{t-1} and p_t relate to the price of the last trades prior and during the ECB's press conference, respectively. We opted for an instrument with a long-term underlying asset due to data availability and because longer maturities react more to monetary policy statements (such as the ECB's press conference) than to the release of monetary policy decisions (see, e.g., Gürkaynak, Sack and Swanson 2005).

[8] Data are obtained from the EU Commission's Eurobarometer survey. The survey is conducted twice a year among roughly 1000 households in each euro area country. The question of interest concerns the trust of respondents in the ECB. Survey participants are asked "Please tell me if you tend to trust or tend not to trust the European Central Bank." Possible answers are "I tend to trust", "I tend not to trust", or "I do not know".

Nationality of Executive Board Members	Dummy variable; one for countries with an Executive Board member of the same nationality
Country Size	Dummy variable; one for the three largest economies in the euro area (France, Germany and Italy) and for the international press
Historical Inflation	Average national consumer price inflation, 1950-1998; set to the average historical euro area rate for the international press

Beyond these variables, we introduce a number of controls, covering a broad range of factors that could affect the way the press reports about the ECB's policy decisions. For instance, journalists' evaluation of the Q&A session of the ECB Press Conference might depend on the personal communication style of the president. We therefore control for the change in the ECB's presidency in November 2003 by a step dummy that takes the value of one under the current president Jean-Claude Trichet, and the value of zero under the former president, Wim Duisenberg. Moreover, as shown in Table 1, the coverage of newspapers varies across countries, with differences in the overall number, as well as the fraction of specialized journals. Furthermore, newspaper coverage varies slightly over time, due to unavailability of some newspapers at the time of the construction of the index. We control for this composition effect in three ways. First, we construct a dummy variable for countries with one or no specialized newspaper in the sample. Second, we enter the number of newspapers sampled within each country for each press conference, as a variable that varies across countries and over time. Third, we construct and include an equivalent variable for the coverage of specialized newspapers for each country and press conference.

A last group of controls captures possible idiosyncrasies in the evaluation and categorization process. We introduce fixed effect variables for each of the experts producing the press indices, which take the value of one for any index measure produced by this individual. In addition to expert-fixed effects, we initially enter country-fixed effects in some of the empirical models to extract country-specific differences in the press coverage. In a later stage, these country-fixed effects are dropped in favor of trying to explain country-differences by country-specific variables.

3.2 Results

Our empirical approach is to first estimate a benchmark Model (1), shown in the first set of columns of Table 3, containing only a small set of the potentially most relevant determinants. Further explanatory variables are then added in Model (2) to assess the robustness of these results. Both models include country-fixed effects to ensure that all other parameter estimates are not affected by cross-country differences in the average press coverage. Lastly, Model (3) drops the country-fixed effects and adds country-specific variables, in order to identify possible determinants for different average coverage across countries.

All results are reported in Table 3, showing the parameter estimates for the underlying linear function of the independent variables described above.

Table 3

ECB policy decisions and communication

Turning first to the ECB's policy decisions, Table 3 shows that monetary policy surprises receive less favorable reporting in the press. Two factors could potentially explain this result – surprises could generally be considered undesirable by the press, or financial market analysts, who often are interviewed by journalists to comment on the decisions, feel a need to explain their forecasting mistake and therefore comment in a rather critical fashion. By contrast, the interest rate decisions themselves do not affect the favorableness (even though it is often argued that interest rate increases are unpopular).

The extent to which a given decision is understood by the media is likely to depend on the explanation given by the ECB, that is, its communication. To analyze how reporting responds to ECB communication, we first look at the role of communication on the meeting day through the press conference. We take the absolute return of long-term bonds during the about 45-minute long press conference as a proxy for its information content.[9] The results of Table 3 indicate that more information is beneficial for the favorableness with which the press reports, in line with the hypothesis that the information conveyed during the press conference allows the press to better understand the rationale of the policy decision, thus inducing a more positive media assessment.

Moreover, we find that the location of Governing Council meetings is relevant for the media reaction to policy decisions, with Governing Council meetings held outside Frankfurt receiving more favorable reporting in the respective national media.

In addition, the communication activities by the ECB president in the time prior to the meeting matters. Favorableness responds to the number of statements that contain forward-looking information regarding monetary policy inclinations, suggesting that more communication ex ante leads to a better understanding of the decision, and thus to a more favorable and more extensive reporting ex post.

Finally, Models (2) and (3) contain a number of additional variables that reflect other forms of communication by the ECB. Since June 2004, the ECB releases during its press conferences in March, June, September and December the staff projections for inflation and output growth. However, we find no discernible response of favorableness to this additional communication.

The environment

Turning to the effects of the economic environment within which a press conference takes place, there is compelling evidence that press reporting is responsive to the most recent inflation figures, with higher inflation implying more critical coverage of individual monetary

[9] It should be stressed, of course, that not all relevant information necessarily moves markets. Furthermore, financial market reactions are not necessarily an indicator for "good" communication. For instance, from a central bank's perspective, there might be cases where the market assessment does not need any updating, and communication is likely to aim (only) to reconfirm the level of interest rates prior to the press conference. In that sense, our measure proxies the new informational content communicated by ECB officials during the press conference communication but not the quality of the communication.

policy decisions.[10] In contrast, reporting is neither found to be responsive to the business cycle, nor to depend on the recent actions of the US Federal Reserve.

Country-specific conditions

In addition to the economic environment of the euro area as a whole, press reporting in individual countries may be influenced by regional conditions. In order to test this hypothesis, we drop the country-fixed effects in Model (3) of Table 3 and include country-specific variables. Most variables do not seem to affect media reporting, though, which could possibly be explained by the fact that, as mentioned in Section 2, cross-country differences in media reporting are relatively minor to start with. A marginally significant effect is found for the level of trust placed in the ECB, with more negative attitudes towards the ECB lead to less favorable reporting, a finding that is consistent with the idea that newspapers slant their articles toward the beliefs of their readers, as suggested in Mullainathan and Shleifer (2005) or Gentzkow and Shapiro (2010). Furthermore, history has a role in shaping the tone of media reporting. We find that countries that historically have had higher inflation report relatively more critically, as higher average national inflation over a long time span from 1950-1998 lowers favorableness.

Robustness and economic significance

We have conducted various robustness tests of our findings.[11] Our results prove remarkably robust along a number of dimensions. First, one interesting fact to note is that dropping the country-fixed effects in model (3), and replacing them with a few country-specific variables, hardly worsens the statistical fit of the model, with the various pseudo-R^2 measures being very close to those reported for model (2).

Second, ignoring the fact that our dependent variable is an ordinal variable, and just estimating simple OLS, yields basically the same conclusions with regard to statistical significance and sign of the regressors. Third, we repeated the estimation of our models excluding the international press. Results are again in line with our baseline results, suggesting that our findings are not driven by differences in the reporting of the national and the international press. We have also tested whether the results are robust to excluding the financial crisis, and find them to be basically unaltered.

Finally, further to the statistical significance, we are also interested in some measure of economic significance of the various findings. We have therefore calculated the marginal effects of a change in an independent variable on the probability for a given outcome of the index, separately for each possible outcome and for each variable (evaluated at the mean of the independent variables). Such a marginal effect denotes the change in the probability for a given outcome of the favorableness index depending on a change in the independent variable. Figure 2 shows the entire set of marginal effects – in a separate plot for each of the independent variables, and for the different possible outcomes within each of the subplots (the possible outcomes of the indices are indicated on the x-axis, the marginal effects on the y-axis). Results are shown for the order probit model (3) of Table 3, along with 95% confidence bounds.

[10] The same result is obtained for inflation being above the ECB's definition of price stability: reporting turns more negative if HICP year-on-year inflation exceeds 2%.
[11] The results of these and other robustness tests are not provided to save space, but are available upon request.

Figure 2

Figure 2 should be read as follows. As an example, focus on the chart in the first row and first column, labeled "ECB Monetary Policy Surprise". This chart shows the effect of a 100 b.p. monetary policy surprise on the favorableness of media reporting, and more precisely on the intensity of favorableness coverage by the media, which ranges from -2 (very negative) to +2 (very positive) and is shown on the horizontal axis of the chart. For instance, a 100 b.p. monetary policy surprise raises the probability of a negative media reporting at -1 by about 0.3 (i.e. 30%) and reduces the probability of a neutral reporting at 0 by about 0.25 (i.e. 25%). Shifts in the overall probability distribution of the media coverage relative to the neutral coverage at 0 may be of more interest as this provides a summary measure of the effect of a particular explanatory variable on media reporting. This can be summarized by the probability mass under the curves in Figure 2 relative to the neutral reporting at 0.

A number of interesting results emerge from these figures. That we see positive and negative marginal effects within each subplot merely reflects the fact that an increasing probability for some outcome must be matched by a decreasing probability of another outcome. The largest effects are triggered by monetary policy surprises and meetings outside Frankfurt: A monetary policy surprise of 25 (100) basis points implies a 12.1% (48%) lower probability of a neutral or favorable reporting, or equivalently a 12.1% (48%) higher probability of a critical report. Having a meeting outside Frankfurt also exerts large effects on favorableness, with a favorable reporting in the national media of the host country being 18.1% more likely.

The magnitudes for the remaining variables are somewhat smaller, but not negligible, either. For instance, each additional inter-meeting communication by the ECB president improves the likelihood of a favorable media reporting at the subsequent Governing Council meeting by 2.1%, whereas a one-standard deviation increase in euro area inflation (equivalent to 0.8%) lowers such probability by 4.9%. Finally, if historical inflation stands higher by one-standard deviation (which is equivalent to 2%), the likelihood of critical reports increases by 3.2%.

4. The Role and Limitations of ECB Communication

The results reported in the previous section show that media reports are responsive to communication efforts by the ECB – in particular through its press conference after Governing Council meetings and during the inter-meeting period. This section analyses in more depth the scope as well as the limitations of these effects.

A first question is whether the favorableness of the reporting of a given decision, which has been shown to depend on the economic environment and the nature of the decisions, is, in addition, influenced by ECB communication. This could be the case because the ECB in its communication efforts attempts to explain the underlying rationale of its decision to the media, which could generate a more favorable reporting. Looking for interaction effects along this line should be particularly interesting with regard to policy surprises as well as periods of high euro area inflation because both have been shown above to trigger a critical media reaction to ECB decisions.

Table 4 addresses this issue based on our already familiar proxy for the informational content of the press conference, that is, the reaction of long-term bonds. The estimated models are

ordered probit estimates for the press coverage index identical to those in Table 3, but we report only the results from the additional interaction variables relating the information content variable with selected characteristics of the policy decisions.

Table 4

The first set of results in the upper panel asks whether an informative ECB press conference can contribute to improving the tone of media reporting in the case of a surprising monetary policy decision. Looking at the four different possible scenarios in the matrix below, we would expect from our previous results that favorableness is low in scenarios A and B, i.e. if a policy decision came as a surprise. What we would like to investigate therefore is whether favorableness in scenario A is improved relative to scenario B, and how A compares to scenarios C and D.

		Informational content in press conference	
		high	***low***
Monetary policy decision	***surprising***	A	B
	anticipated	C	D

The results in Table 4 show how A, B and C compare to D. The results show that press reporting is significantly more critical in case B, i.e. if a surprising policy decision is followed by a press conference with low informational content. Importantly, scenario B is not only statistically different from D (as judged from the statistical significance of the estimated coefficient, but also from cases A and C, as indicated by the tests of equality. What these results imply is that a surprising decision will receive negative reports in the media only if the ECB neglects to provide a sufficiently large amount of information during the press conference.

A second, related, test is conducted in the middle panel, where we ask whether the reception of interest rate changes depends on the explanations that are provided by the ECB. Looking at the interaction effects in Table 4, it turns out that interest rate changes are received relatively favorable if these decisions are accompanied by an information-rich press conferences, a case that is statistically significantly different from all other scenarios.

Third, looking at the economic environment (lower panel), we find that reporting tends to be critical of ECB actions if inflation exceeds 2%, regardless of the market reaction during the press conference. These results underline the media's role as a critical observer of the central bank in the euro area.

Another possible channel for the ECB to influence the perception of monetary policy decisions could be inter-meeting communication, including speeches by the ECB president. Accordingly, Table 5 reports information on the interaction of inter-meeting communication and monetary policy decisions with regard to newspaper reporting. The construction of the table follows Table 4. The result confirm the impression that interest rate changes are seen positively by the press if they are accompanied (or, in this case, preceded) by a systematic communication effort by the ECB – if interest rates are changed, press reports are significantly more favorable if there has been a relatively large number of statements prior to the Governing Council meeting.

Table 5

In summary, the findings indicate that ECB communication does impact the way the press reports on the central bank's policy decisions – albeit not without limits. While the ECB tends to receive more favorable reporting when its actions are either preceded or followed by a concentrated communication effort, communication has little or no impact on the critical view the media takes during periods where inflation exceeds the 2% target.

5. Conclusions

The dissemination of central bank communication through the media is important for central banks in their efforts to address the general public. Reaching the general public, and not only financial market participants, is crucial because it is the public whose inflation expectations eventually feed into the evolution of inflation through wage claims and savings, investment and consumption decisions, and thus affect how a central bank is able to achieve its policy objectives.

This paper has systematically assessed the favorableness of the coverage that the ECB receives in response to monetary policy decisions in the international and national press. Using a novel dataset that quantifies press coverage in the 12 countries of the euro area and internationally, based on 57 newspapers reaching back to 1999, the paper has identified a large number of determinants for the favorableness of press coverage. The findings indicate that the assessment of ECB policy decisions in the media is influenced substantially by the nature of the decisions as well as by the general economic environment. In particular, less favorable reporting prevails if a decision is unanticipated and in an environment of relatively high inflation. Moreover, consistent with the hypothesis that communication could be a tool to create a better understanding of policy decisions, the paper has found that the favorableness and the extent of media coverage are highly responsive to the type and content of ECB communication. For instance, we have found that a policy surprise, which on average leads to more unfavorable reporting, receives as favorable a reporting by the media as a fully anticipated policy decision if the ensuing ECB press conference conveys a substantial amount of information. A related finding suggests that the frequency of inter-meeting communication has a positive impact on the tone of the media discussion. However, there are also clear indications that the role of communication has its limits. For instance, we have found that the media reporting of ECB policy decisions is always more negative in tone when inflation is higher than 2%, even when pre-meeting communication is intense or the information content of press conferences is high.

In sum, the paper has provided first insights into the role of the media in the transmission of central bank decisions and communication to the public. Given the novelty of the approach, several questions remain unanswered. This paper has looked at the case of the ECB. Comparing press coverage across central banks might enable to shed light on the efficiency of the different communication practices of central banks. Other possible extensions include a separate analysis of generalized newspapers and the financial press, a broader analysis including also regional newspapers, which often have a very high circulation, and as such the potential to reach a large audience, or of mass media other than the printed press. We leave this for future research.

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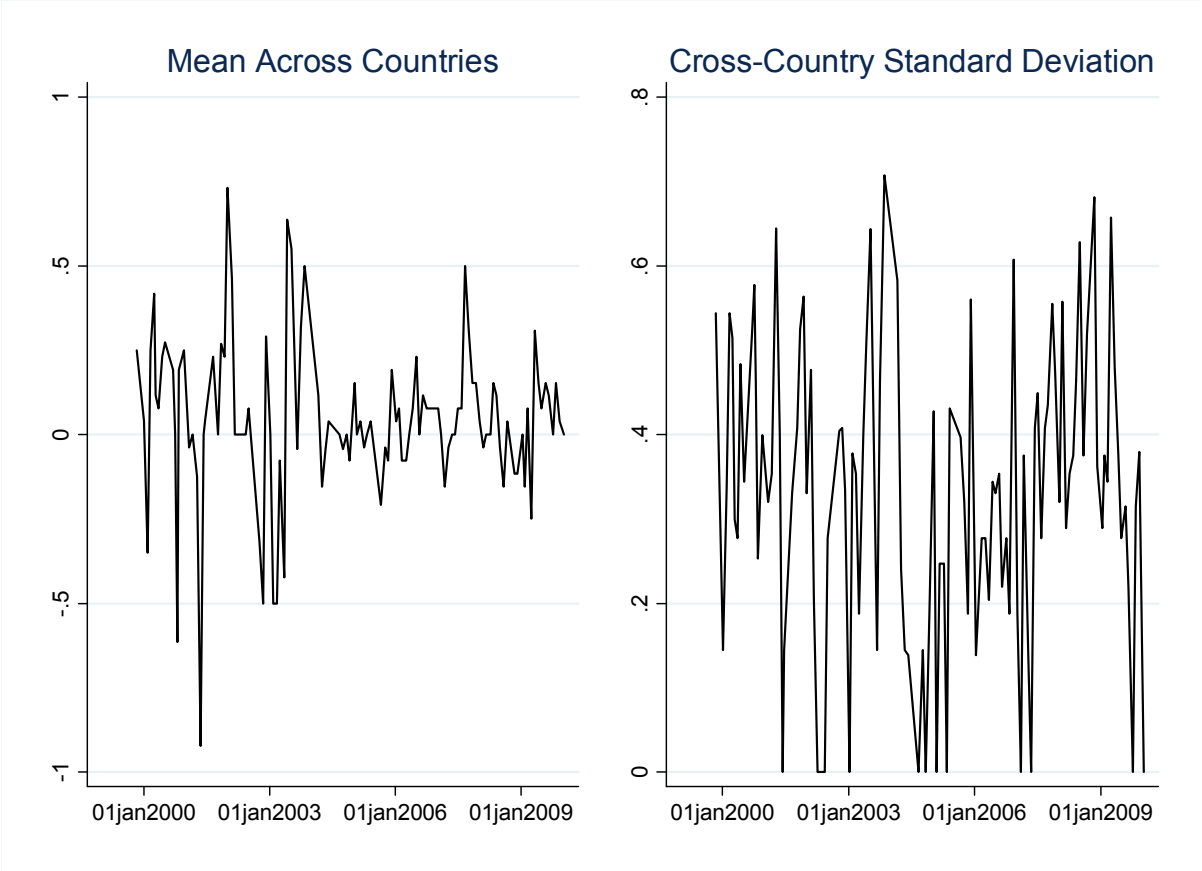
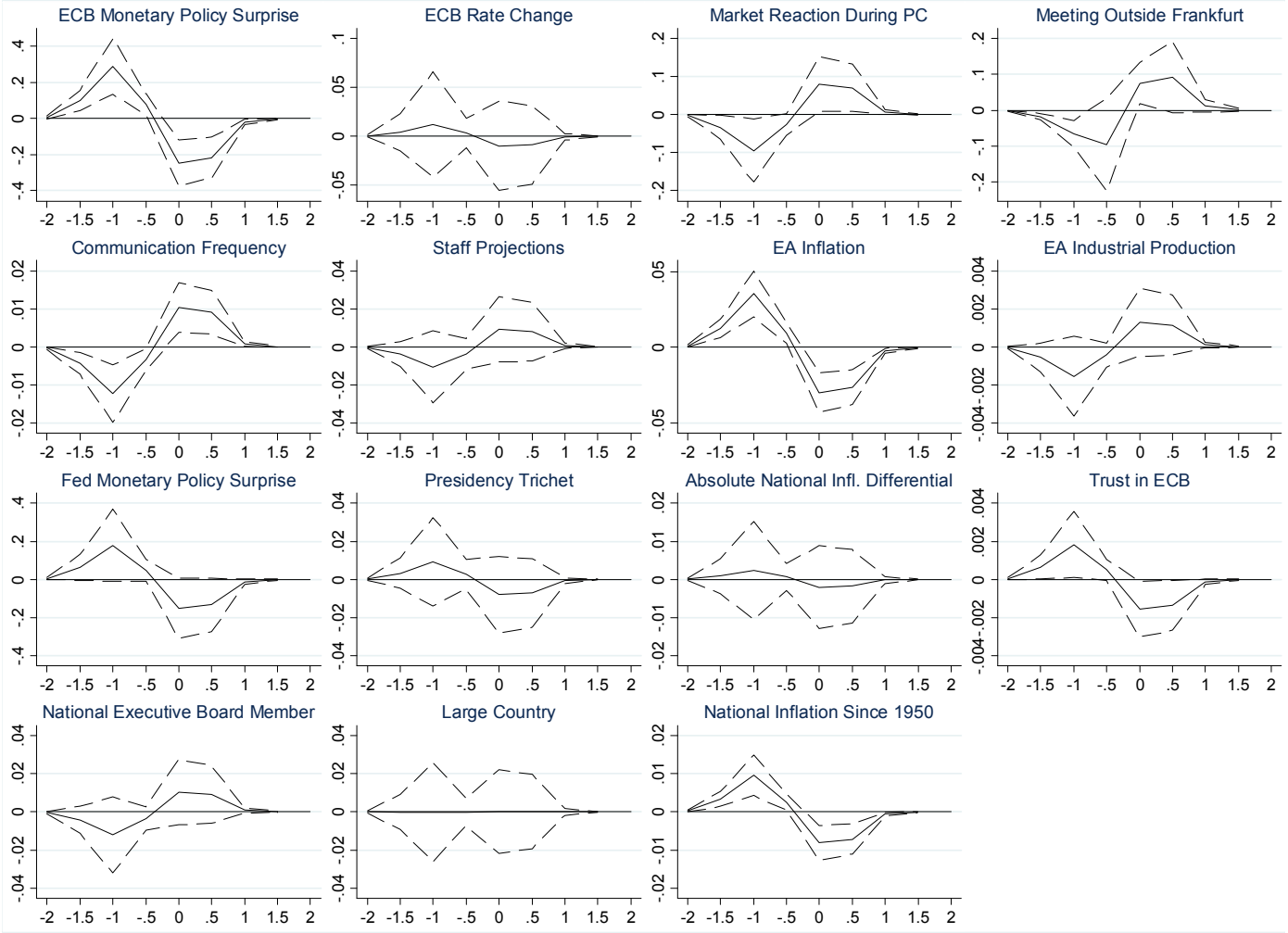
Figure 1: Evolution of the Press Coverage of the ECB's Monetary Policy



Notes: The chart plots the average value of the press index for each Governing Council meeting in the left panel, and the cross-country standard deviation in the right panel.

Figure 2: Determinants of Press Coverage in Model (3), Marginal Effects Evaluated at the Different Outcomes



Notes: The solid lines in the Figure show the marginal effects of a change in the independent variables (evaluated at their means) on the probability for a given outcome of the favorableness index. Dotted lines denote 95% confidence bounds. All marginal effects shown are based on estimates of model (3) of Table 3, for the up to 111 Governing Council meetings between 7 October 1999 and 10 January 2010, across all euro area countries, and containing fixed-expert effects. See section 3 for a detailed discussion.

Table 1: Sample of newspapers covered

Country	General Press	Specialized Press
International	International Herald Tribune, Neue Zürcher Zeitung	Financial Times, Wall Street Journal Europe
Austria	Die Presse, Salzburger Nachrichten, Der Standard	Wirtschaftsblatt
Belgium	De Standaard, *La Libre Belgique*	De Financieel Economische Tijd, L'Echo
Finland	Helsingin Sanomat	Kauppalehti, Taloussanomat
France	Le Monde, Le Figaro, Libération	La Tribune, Les Echos
Germany	Frankfurter Allgemeine Zeitung, Süddeutsche Zeitung*, Die Welt, Bildzeitung*	Börsen-Zeitung, Financial Times Deutschland, Handelsblatt
Greece	Eleftherotypia, Kathimerini, Ta Nea, *Imeresia, Kerdos*	Naftemporiki
Ireland	The Irish Independent, The Irish Times, *The Examiner*	
Italy	Corriere della Sera, La Repubblica, La Stampa, *Il Giornale, Il Messaggero*	Il Sole 24 Ore
Luxembourg	Luxemburger Wort, *La Voix de Luxembourg*	
The Netherlands	NRC Handelsblad, De Telegraaf, De Volkskrant	Het Financieele Dagblad
Portugal	Diário de Notícias, Público, *Correo da manha*	Diário Económico
Spain	El País, El Mundo, ABC	Cinco Días, Expansión

Notes: Newspapers in italics are rarely included in the sample.

Table 2a: Summary statistics of the press coverage index

Country	Obser-vations	Mean	Standard deviation	Minimum	Maximum
International	110	0.023	0.461	-1.5	1.5
Austria	106	0.080	0.366	-1.0	1.5
Belgium	109	0.018	0.396	-1.0	1.0
Finland	110	0.055	0.391	-1.0	1.0
France	110	0.018	0.400	-1.0	1.0
Germany	110	0.141	0.606	-2.0	1.0
Greece	102	-0.103	0.447	-1.5	1.0
Ireland	105	0.038	0.442	-1.0	1.5
Italy	107	0.014	0.360	-1.0	2.0
Luxembourg	108	0.106	0.321	-0.5	1.5
The Netherlands	110	0.055	0.425	-1.5	1.0
Portugal	110	0.036	0.316	-1.0	1.5
Spain	111	0.036	0.446	-1.0	1.5
Total	1408	0.040	0.422	-2.0	2.0

Notes: The table reports summary statistics for the index of favorableness of press reporting of Governing Council meetings between 7 October 1999 and 10 January 2010, broken down by euro area country. The index ranges on a scale ranging from -2 to 2, i.e. from very negative to very favorable. See section 2 for a detailed discussion of the index construction.

Table 2b: Summary statistics of the explanatory variables

Variable	Obser-vations	Mean	Standard deviation	Minimum	Maximum
ECB's Policy Decisions & Communication Tools					
Policy Decisions					
ECB Monetary Policy Surprise	1408	0.022	0.071	0.00	0.25
ECB Monetary Policy Decision	1408	-0.014	0.183	-0.75	0.50
Meeting-Day Communication					
Market Reaction During Press Conference	1408	0.115	0.107	0.00	0.62
Meeting Outside Frankfurt	1408	0.013	0.115	0.00	1.00
Inter-Meeting Communication					
Communication Frequency	1408	0.879	1.046	0.00	4.00
Other Communication					
Release of Staff Projections	1408	0.212	0.409	0.00	1.00
Environment					
Euro Area Macro Conditions					
Inflation	1408	2.132	0.826	-0.70	4.00
Industrial Production	1408	-0.082	6.059	-21.60	8.00
Federal Reserve					
Fed Monetary Policy Surprise	1408	0.010	0.047	0.00	0.25
ECB presidency					
Presidency of J-C. Trichet	1408	0.623	0.485	0.00	1.00
Country-Specific Conditions					
Absolute National Inflation Differential	1408	0.704	0.727	0.00	6.50
Share of respondents not trusting the ECB	1408	24.200	7.630	9.00	58.00
National Executive Board Member	1408	0.464	0.499	0.00	1.00
Large Country	1408	0.310	0.463	0.00	1.00
National Inflation Since 1950	1408	5.617	2.002	2.66	9.64

Notes: The table reports summary statistics for the explanatory variables for the index of favorableness of press reporting, covering Governing Council meetings between 7 October 1999 and 10 January 2010, across all euro area countries. See section 3 for a detailed discussion of each of these explanatory variables.

Table 3: Determinants of press coverage

	(1)		(2)		(3)	
	Coefficient	*Std. error*	Coefficient	*Std. error*	Coefficient	*Std. error*
ECB's Policy Decisions & Communication Tools						
Policy Decisions						
ECB Monetary Policy Surprise	-1.851 ***	*0.591*	-1.904 ***	*0.608*	-1.921 ***	*0.605*
ECB Monetary Policy Decision	-0.047	*0.218*	-0.068	*0.220*	-0.078	*0.217*
Meeting-Day Communication						
Market Reaction During Press Confere	0.588 *	*0.337*	0.571 *	*0.340*	0.626 *	*0.337*
Meeting Outside Frankfurt	0.533 *	*0.277*	0.554 **	*0.279*	0.576 **	*0.287*
Inter-Meeting Communication						
Communication Frequency	0.081 ***	*0.030*	0.084 ***	*0.030*	0.081 ***	*0.030*
Other Communication						
Release of Staff Projections	-- --	--	0.079	*0.078*	0.071	*0.079*
Environment						
Euro Area Macro Conditions						
Inflation	-0.211 ***	*0.058*	-0.228 ***	*0.060*	-0.233 ***	*0.060*
Industrial Production	0.010	*0.009*	0.010	*0.009*	0.010	*0.008*
Federal Reserve						
Fed Monetary Policy Surprise	-- --	--	-1.075	*0.739*	-1.184	*0.752*
ECB presidency						
Presidency of J-C. Trichet	-- --	--	-0.120	*0.095*	-0.062	*0.095*
Country-Specific Conditions						
Absolute National Inflation Differentia	-- --	--	-- --	--	-0.016	*0.052*
Share of respondents not trusting the E	-- --	--	-- --	--	-0.012 *	*0.007*
National Executive Board Member	-- --	--	-- --	--	0.080	*0.081*
Large Country	-- --	--	-- --	--	0.001	*0.105*
National Inflation Since 1950	-- --	--	-- --	--	-0.064 ***	*0.021*
Controls for newspaper coverage	Yes		Yes		Yes	
Expert fixed effects	Yes		Yes		Yes	
Country fixed effects	Yes		Yes		None	
Number of observations	1408		1408		1408	
McFadden's adj. R^2	0.01		0.01		0.00	
Cragg-Uhler (Nagelkerke) R^2	0.13		0.13		0.11	
McKelvey & Zavoina's R^2	0.14		0.14		0.14	
BIC	-6744.71		-6727.75		-6748.06	

Notes: The table shows results of ordered probit models $\Pr(outcome = i) = \Pr(\mu_{i-1} < \beta' X + u \leq \mu_i)$ that explain the probability of the various outcomes of the press index of favorableness as dependent variable, and the vector *X* as explanatory variables. The model is estimated for the up to 111 Governing Council meetings between 7 October 1999 and 10 January 2010, across all euro area countries. The models in columns (1) and (2) contain fixed-country effects, and fixed-expert effects in all three models. ***, **, and * indicate significance at the 99%, 95%, and 90% levels, respectively. Robust standard errors are shown in italics.
See section 2 for a detailed discussion of the construction of the favorableness index, and section 3 for the independent variables *X*.

Table 4: The role of press conference communication

		Coefficient	*Std. error*	test of equality (2)	test of equality (3)
	Policy surprise:				
(1)	**Large** market reaction in PC & policy surprise	-0.131	*0.197*	**0.023**	0.368
(2)	**Small** market reaction in PC & policy surprise	-0.824 ***	*0.245*		**0.000**
(3)	**Large** market reaction in PC & **no** policy surprise	0.051	*0.069*		
	Policy change:				
(1)	**Large** market reaction in PC & policy change	0.428 ***	*0.146*	**0.006**	**0.007**
(2)	**Small** market reaction in PC & policy change	-0.031	*0.131*		0.683
(3)	**Large** market reaction in PC & **no** policy change	0.025	*0.072*		
	Euro area inflation:				
(1)	**Large** market reaction in PC & EA inflation **above** 2%	-0.181 *	*0.104*	0.468	**0.006**
(2)	**Small** market reaction in PC & EA inflation **above** 2%	-0.248 ***	*0.090*		**0.000**
(3)	**Large** market reaction in PC & EA inflation **below** 2%	0.126	*0.101*		
	Controls for newspaper coverage	Yes			
	Expert fixed effects	Yes			
	Country fixed effects	None			
	Number of observations	1408			

Notes: The table shows the parameter estimates of ordered probit models as described for Table 3, model (3), only that in addition interactions between the respective communication variable and the decision or economic environment variables are also included. The model is again estimated for the up to 111 Governing Council meetings between 7 October 1999 and 10 January 2010, across all euro area countries, and contains fixed-expert effects. For the upper panel of the table, a market reaction during the press conference is defined as "large" if the absolute return in the German long-term bund futures contracts during the course of the entire press conference lies above the sample mean. For the bottom panel, a country's inflation differential is defined as "large" if the absolute national inflation differential to the euro area lies above the sample mean. ***, **, and * indicate significance at the 99%, 95%, and 90% levels, respectively. Robust standard errors are shown in italics. Numbers for tests of equality denote p-values; significant results at the 10% level are shown in bold.

Table 5: Frequency of inter-meeting communication and monetary policy changes

				test of equality	
		Coefficient	*Std. error*	(2)	(3)
(1)	**High** frequency & policy change	0.315 **	*0.126*	**0.002**	**0.001**
(2)	**Low** frequency & policy change	-0.225	*0.157*		0.463
(3)	**High** frequency & **no** policy change	-0.110	*0.072*		
	Controls for newspaper coverage	Yes			
	Expert fixed effects	Yes			
	Country fixed effects	None			
	Number of observations	1408			

Notes: The table shows the parameter estimates of ordered probit models as described for Table 3, model (3), only that in addition interactions between the frequency of inter-meeting communication and monetary policy changes are also included. The model is again estimated for the up to 111 Governing Council meetings between 7 October 1999 and 10 January 2010, across all euro area countries, and contains fixed-expert effects. The frequency of inter-meeting communication is defined as "high" if the number of statements about monetary policy inclination lies above the sample mean. ***, **, and * indicate significance at the 99%, 95%, and 90% levels, respectively. Robust standard errors are shown in italics. Numbers for tests of equality denote p-values; significant results at the 10% level are shown in bold.